CHAIR’S NOTE
Dan Burrows
Chair
ASQ Reliability & Risk Division
dan@asqrrd.org

Hello ASQ Reliability & Risk Division Members,

As we come to the close of 2018, I want to wish you a Happy Holiday Season and a Happy New Year. Understanding that some of us celebrate a different holiday season and different start of the new year, this is a wish in advance for you.

Even though 2018 has been a challenging year due to ASQ Transformation, more on this later, our Division has continued to be a leader of ASQ with the highest member retention and member growth, strong finances, and successful events and outreach such as RAMS 2018, the 4th Annual ASQ MEA Conference, Webinars, and Regional Counselor engagements. We also congratulate Dr. Nathaniel T. Stevens and Dr. Christine M. Anderson-Cook on recently receiving the 2017-2018 Best Reliability Paper Award for their paper, Quantifying similarity in reliability surfaces using the probability of agreement, published in Quality Engineering, 2017, vol. 29, no. 3

In 2019, we will strive to build on our successes. You may not know this, but in 2019 we wish our Division a Happy 50th Anniversary! You will see special events and communications in 2019 to celebrate this. Get ready for RAMS 2019 on January 28-31 in Orlando, FL. Trevor Craney, Jim Breneman, and JD Solomon will also be providing pre and post conference training sessions www.rams.org. Also get ready for our new Reliability Conference on October 15-17, 2019 in San Antonio, TX. We will send more details and a call for papers in the near future and post details on our website at www.asqrd.org. We will be providing pre and post conference training sessions at this event as well.

In 2019, we also face the final challenges of ASQ Transformation since the final actions of transformation will be implemented. The promise of ASQ Transformation for Divisions was that ASQ HQ would provide the “office” functions such as IT and accounting that are currently a burden to Divisions so that Divisions can focus our efforts and energy on providing more value to Division Members in particular and ASQ Members as a whole. And this is how it should be - that ASQ HQ be a service function to ASQ Divisions, Sections, and Members. Unfortunately, the reality has become that the ASQ Board of Directors approved a Technical Communities Transformation Resolution in November 2017 and a Member Unit Operating Agreement in November 2018 that fundamentally changes the governance, funding, and autonomy of Divisions to focus more on serving the Organizational Solutions business unit of ASQ. I do not agree with what is being done and it is our right as Members of ASQ to voice our concerns without fear of retaliation. The impact to the ASQ Reliability & Risk Division and other Divisions is that that we have turned over all of our reserve and investment funds with no guarantee that we will have any access to these funds in the future and we will also be expected to report to and have all of our Division affairs now approved by a Segment Manager at ASQ HQ.

I will remain as hopeful as I can for the future of our and the other ASQ Divisions given the circumstances surrounding ASQ Transformation. As we receive more details, we will communicate them out to you, our Division Members, for you to review for yourselves.

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ASTM Committee E11 has just released a new standard, E3159-18, “Standard Guide For General Reliability”. The task group was led by Stephen Luko, the current chair of ASTM sub-committee E11.40 on Reliability, a member of ASQRRD (and a CRE). The standard is available through ASTM International (https://astm.org). It is also designated as an American National Standard. While developed for the general practitioner and covering a broad array of reliability topics, it contains insight and review topics that would also be useful for people wishing to brush-up for the CRE. This committee is currently working on a new development concerning reliability demonstration testing and is always open to others interested in helping with the development. Interested individuals should contact S. Luko at stephen.luko@collins.com (860-654-3447).

New Standard Published – Guide For General Reliability, ASTM, Committee E11.40 on Reliability

On Nov 14, our Reliability and Risk Division Chair-Elect Trevor Craney presented on “Assessing Risk & Reliability – Opportunities in the Digital Age” at the ASQ MEA Conference in Dubai, United Arab Emirates. Other speakers at the conference included: ASQ CEO Bill Troy, ASQ Chair Elmer Corbin, Jim Nelson from the Innovation Division, Jim Spichiger from the Inspection Division, and others, including local leaders. There were over 200 in attendance as ASQ continues to expand its global reach of quality (and reliability). Trevor also taught a pre-conference course on Reliability in Risk-Based Decision-Making.
ASQ-RRD MEMBERSHIP IS TRULY WORLD-WIDE

While we have 2284 members in the US, there are 2844 ASQRRD Members worldwide.

In sum, have 1 or more members in 68 countries

ASQRRD Membership by Continent

- North America: 2463, 86.6%
- South America: 24, 0.8%
- Australia: 26, 0.9%
- Africa: 35, 1.2%
- Europe: 72, 2.5%
- Asia: 224, 7.9%
Social Media and Webinar Roundup!!

Social Media (Tim Gaens tim@asqrrd.org)

Current follower status on the social media:
LinkedIn: 4,064
Twitter: 607
Facebook: 23

Upcoming Webinars

English Webinars:

The webinars are set for December and January:
Date: Thursday Dec 13, noon EDT
Topic: ‘Dispelling the myth that Quality and Reliability are ""Kissing Cousin’s"”
BY: Adam Bahret
Link to registration: https://attendee.gotowebinar.com/register/6059146191760727810

Date: Thursday Jan. 10, noon EDT
Topic: “An Introduction to Uncertainty Quantification for Reliability & Risk Assessments”
BY: Mark Andrews
Link to registration: https://attendee.gotowebinar.com/register/9156327511401342721

Calling all Webinar Authors!!

Dave Auda (davidauda@yahoo.com)

We would like to extend an invitation on behalf of the ASQ Risk and Reliability Division (ASQRRD). If you would be interested in being a presenter of an ASQRRD webinar, contact Dave Auda. Webinars run every 2nd Thursday of the month at noon EDT for 1 hour,. The content should be something that the attendees can use, Reliability-related knowledge and/or skill.

Why present? A large potential audience that we invite, an additional entry to your resume demonstrating competence, refine your skills, AND earn recertification points.

If you have need of support in developing, preparing and/or presenting at such an event, we can support. Become a recognized subject matter expert!
QE Best paper Award

QE BEST PAPER AWARD – CALL FOR PAPERS!

$1000 Annual Award for Best RELIABILITY Paper!

Continuing in 2018-2019, the ASQ Reliability & Risk Division will administer a $1000 annual award for the Best Reliability Paper published in Quality Engineering. To be eligible for the award, at least one of the authors of the paper must be a member of the ASQ Reliability & Risk Division at the time when their paper was published.

The reliability focused papers appearing in the four issues from July 2018 to June 2019 will be considered.

For more information, please contact Prof. Rong Pan at rong.pan@asu.edu.

A Reliability & Risk NOTE... How Good is an Inspection?

A test was done on ultrasonic inspection kits to determine how effective they are in discovering microscopic cracks in aircraft parts. When a crack was present, the equipment signaled a crack 98% of the time. There was a “false alarm” on 3% of the parts which had no cracks. Suppose five percent of all the parts have a crack in them. If the percentages in the test can be assumed to be the true probabilities, what is the probability that a part is really bad when a kit signals a crack.

Let A= event that the part has a crack
Let B= event ultrasonic inspection indicates a part has a crack.

Now,

P(A)=.05 (5 parts in 100 have a crack)
P(B|A)=.98 (Probability of a positive test, given a crack, is .98)
P(B| NOT A)=.03 (Probability of a false positive, given no crack, is .03)
P(A|B)=? (Probability of having a crack, given a positive test)

For all of you Bayes Theorem fans, the following solves it in one step:

\[
P(A \mid B) = \frac{P(B \mid A) * P(A)}{P(B)} = \frac{P(B \mid A) * P(A)}{P(B \mid A) * P(A) + P(B \mid Not A) * P(Not A)} = \frac{0.98 * 0.05}{0.98 * 0.05 + 0.03 * 0.95} = \frac{0.049}{0.049 + 0.0285} = 0.632
\]

So, the probability that a part is really bad, given an ultrasonic inspection indicates a crack=0.63
R&M In The Second Machine Age
— The Challenge of Cyber Physical Systems

January 28-31, 2019
At the Walt Disney Contemporary Resort,
Orlando, Florida, USA
Reliability & Quality Software

KEY HIGHLIGHTS

- Integrated suite
- Stand-alone tools
- FMEA, FMECA
- FRACAS, CAPA
- Fault Tree
- Reliability Prediction
- Maintainability
- Reliability Block Diagram
- Weibull
- Browser-based
- On-premise or cloud-based
- Online or in-person training
- Implementation services
- Knowledgeable tech support
- Free, no install trial

Relyence offers a complete solution for all your reliability and quality software needs. Along with our software tools, we offer top-notch technical support, implementation services, and training.

The Relyence Solution. Providing seamless integration between FMEA (including Process Flow Diagrams and Control Plans), FRACAS, Fault Tree, Reliability Prediction, Maintainability, RBD, and Weibull analyses, the Relyence tool suite empowers you to effectively manage your products throughout their lifecycle. You can use each module stand-alone, or combine the tools you need in our Relyence Studio integrated platform.

Power & Innovation. Relyence tools offer an impressive list of features. Just a few of the highlights include: customizable cross-module dashboards; user-interface customization; flexible report generation; data importing and exporting; API functionality; device libraries; workflow, approvals, and notifications; user and group roles and permissions; and Relyence innovations such as always-in-sync™ technology, smart-layout, Knowledge Bank™ for lessons learned reusability, and FMEA-Fault Tree link-sync™.

Flexibility & Collaboration. All Relyence tools can be accessed from any computer, PC, Mac, laptop, tablet, or smartphone for ultimate flexibility and team collaboration. You can use Relyence either as an on-premise installation on individual computers or a network, or as a zero-client, browser-based platform with your data hosted in the Microsoft cloud or in your own private cloud. The choice is yours!

Rely on Excellence. In conjunction with our software tools, we provide world-class services to help ensure your success. Our Implementation and Training teams can get you up to speed quickly, and our Technical Support team consistently provides support that is unparalleled in the industry.

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Skills development for engineering professionals

Through a combination of lecture and hands-on exercises, Prenscia Academy students will:

- Develop skills by applying methods and software tools that increase product dependability, reliability and durability
- Gain deeper insights on optimizing maintenance and asset management strategies (Weibull, RAM, RCM...)
- Implement risk discovery and management strategies (FMEA, FRACAS, RBI...)

As an SMRP Approved Provider, select HBM Prenscia Academy training courses are recognized to provide continuing education that aligns with the most relevant topics and best practices in the industry according to the SMRP Body of Knowledge and/or the Asset Management Landscape, which is published by the Global Forum on Maintenance and Asset Management.
2018-2019 ASQ-RRD LEADERSHIP POSITIONS

Elected Positions

Chair
Dan Burrows
dan@asqrrd.org

Chair-Elect
Trevor Craney
tacraney@yahoo.com

Secretary
Tim Gaens
tim@asqrrd.org

Treasurer
Jim Breneman
weibullman@gmail.com

Past Chair
Dave Auda
davidauda@yahoo.com

Appointed Positions

Membership Chair
Tim Gaens
tim@asqrrd.org

Membership Vice-Chair
Suprasad Amari
suprasad.amari@gmail.com

Nominating Chair
Marc Banghart
marc@asqrrd.org

Education & Arrangements Chair
Trevor Craney
tacraney@yahoo.com

Regional Counsellors Coordinator
Dan Burrows
dan@asqrrd.org

QE Best Paper Award Chair
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Contact Dan (dan@asqrrd.org) to volunteer with us today!
1. The mean number of life units during which all parts of the item perform within their specified limits, during a particular measurement interval under stated conditions. This is the definition of ______________ for a repairable item.
   - MTBF - Mean Time Between Failures
   - MTTF - Mean Time To Failure
   - MTBM - Mean Time Between Maintenance
   - MDT - Mean Maintenance Downtime

2. The sum of corrective maintenance times at any specific level of repair, divided by the total number of failures within an item repaired at that level, during a particular interval under stated conditions? This is the definition of ______________.
   - MTBM - Mean Time Between Maintenance
   - MTTR - Mean Time To Repair
   - MTBF - Mean Time Between Failures
   - MDT - Mean Maintenance Downtime

3. When a test is terminated before all units fail the resulting data are known as:
   - right censored
   - left censored
   - interval data
   - None of these

4. The main responsibilities of a Failure Review Board include all except which of the following?
   - Assessing failures
   - Monitoring Corrective Action to prevent failure Reoccurrence
   - o Setting up accelerated life tests
   - o Monitoring reliability growth.

5. Which one is the most important input for Reliability Program development?
   - MTBF prediction data
   - Accelerated life test data
   - Customer requirements from their mathematical modeling data
   - Customer requirements from their empirical data

6. Customer inputs at the concept stage of design are used to drive all except which of the following?
   - Initial reliability predictions based on field data
   - Criteria for acceptable product performance
   - Development of operational profiles
   - Identification of suitable design verification tests

7. In which of the following life cycle phases is Reliability prediction most useful as an aid during tradeoffs between various operating scenarios (such as operating conditions, customer usage)?
   - Concept
   - Development
   - Production
   - Test

8. Manufacturing errors are the primary reason for products failing during the:
   - Infant mortality stage.
   - Useful life stage.
   - Wear-out stage.
   - Infant mortality and wear-out stages

9. During its useful life period, the MTTF for a particular type of light bulb is 2000 hours. Out of 1000 of these bulbs, how many will have burned out after 1500 hours?
   - 472
   - 528
   - 736
   - 750

10. A unit has a design life of 1,000 days. It has a MTBF that is estimated to be 50 days, requiring a mean time to repair of 15 days. The acquisition cost for this unit is $150,000. Each time that the unit fails, a fixed cost of $3,000 is incurred along with a variable cost of $500/day. What is the expected cost of this unit over its design life?
    - $240,000
    - $210,000
    - $360,000

Answers will appear on ASQRRD blog by Dec 17